**IN THE CLAIMS:**

Please substitute the following claims for the same-numbered claims in the application:

1. (Currently Amended) A method for decomposing a linear program comprising:

relaxing material balance and sourcing constraints of said linear program based on stocking point criteria;

initially solving, by a computer system, ~~the~~ said linear program with ~~relaxed~~ material balance and sourcing constraints to produce an initial solution,

wherein, during said initially solving, selected ones of said material balance and sourcing constraints are relaxed based on stocking point criteria,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program,

wherein said least complex parts comprise raw materials and unassembled parts, and

wherein said initial solution identifies values for variables in said linear program;

replacing variables in said linear program with constants based on said initial solution;

restoring said material balance and sourcing constraints; and

finally solving, by said computer system, ~~the~~ said linear program using said values identified in said initial solution as said variables ~~constants~~ and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed in order to obtain a complete solution of said linear program.

2. (Currently Amended) The method in claim 1, further comprising, before said initially solving of said linear program, decomposing said linear program into smaller ~~independent~~ linear programs, wherein said process of initially solving said linear program solves said smaller ~~independent~~ linear programs simultaneously in parallel.

3. (Cancelled).

4. (Currently Amended) The method in claim 1, ~~further comprising selecting~~ wherein said selected ones of said material balance and sourcing constraints ~~that~~ are associated with parts that have supply availability and lack capacity constraints ~~as said relaxed material balance and sourcing constraints~~.

5. (Currently Amended) The method in claim 1, ~~further comprising selecting~~ wherein said selected ones of said material balance and sourcing constraints ~~that~~ are associated with parts that are available during the planning horizon of said linear program ~~as said relaxed material balance and sourcing constraints~~.

6. (Original) The method in claim 5, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

7. (Currently Amended) The method in claim 1, wherein said stocking point criteria are associated with ~~relates to~~ time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available.

8. (Currently Amended) A method for solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:

~~determining which~~ identifying, based on stocking point criteria, selected ones of said material balance and sourcing constraints ~~can~~ to be ~~temporarily~~ relaxed,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program, and

wherein said least complex parts comprise raw materials and unassembled parts;

relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints ~~based on said determining process~~;

decomposing, by a computer system, said linear program into smaller ~~independent~~ linear programs;

initially solving, by said computer system, each of said smaller ~~independent~~ linear programs with said material balance and sourcing constraints ~~relaxed constraints~~ to produce an initial solution,

wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and

wherein said initial solution identifies values for variables in said linear program;

replacing variables in said linear program with constants based on said initial solution;

restoring said material balance and sourcing constraints; and

finally solving, by said computer system, said linear program using said values identified in said initial solution as said variables ~~constants~~ and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution of said linear program.

9. (Currently Amended) The method in claim 8, wherein said process of initially solving each of said smaller ~~independent~~ linear programs solves said smaller ~~independent~~ linear programs simultaneously in parallel.

10. (Cancelled).

11. (Currently Amended) The method in claim 8, wherein said ~~determining process identifies constraints that~~ selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints ~~as said constraints that can be temporarily relaxed~~.

12. (Currently Amended) The method in claim 8, wherein said ~~determining process identifies constraints that~~ selected ones of said material balance and sourcing constraints are

associated with parts that are available during the planning horizon of said linear program ~~as said constraints that can be temporarily relaxed~~.

13. (Original) The method in claim 12, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

14. (Currently Amended) The method in claim 8, wherein said ~~determining process is based on~~ stocking point criteria are associated with time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available.

15. (Currently Amended) A method for solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:

~~determining which~~ identifying selected ones of said material balance and sourcing constraints ~~can~~ to be ~~temporarily~~ relaxed based on stocking point criteria that are associated with ~~relates to~~ time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program, and

wherein said least complex parts comprise raw materials and unassembled parts;

relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints ~~based on said determining process~~;

decomposing, by a computer system, said linear program into smaller ~~independent~~ linear programs;

initially solving, by said computer system, said smaller ~~independent~~ linear programs with said material balance and sourcing ~~relaxed~~ constraints to produce an initial solution,

wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and

wherein said initial solution identifies values for variables in said linear program;

~~replacing variables in said linear program with constants based on said initial solution;~~ restoring said material balance and sourcing constraints; and

finally solving, by said computer system, said ~~the~~ linear program using said values identified in said initial solution as said variables ~~constants~~ and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution of said linear program.

16. (Currently Amended) The method in claim 15, wherein said process of initially solving each of said smaller ~~independent~~ linear programs solves said smaller ~~independent~~ linear programs simultaneously in parallel.

17. (Cancelled).

18. (Currently Amended) The method in claim 15, wherein said ~~determining process identifies constraints that~~ selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints ~~as said constraints that can be temporarily relaxed~~.

19. (Currently Amended) The method in claim 15, , wherein said ~~determining process identifies constraints that~~ selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program ~~as said constraints that can be temporarily relaxed~~.

20. (Original) The method in claim 19, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

21. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method for solving a linear program having constraints in a production planning system, said method comprising:

~~determining which~~ identifying, based on stocking point criteria, selected ones of said material balance and sourcing constraints ~~can~~ to be ~~temporarily~~ relaxed,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program, and

wherein said least complex parts comprise raw materials and unassembled parts;

relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints ~~based on said determining process~~;

decomposing said linear program into smaller ~~independent~~ linear programs;

initially solving each of said smaller ~~independent~~ linear programs with ~~relaxed~~ said material balance and sourcing constraints to produce an initial solution,

wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and

wherein said initial solution identifies values for variables in said linear program;

replacing variables in said linear program with constants based on said initial solution;

restoring said material balance and sourcing constraints; and

finally solving said linear program using said values identified in said initial solution as said variables ~~constants~~ and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution of said linear program.